

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-41

Name: Cavour Lake

County: Beadle

Legal Description: T111N- R60W-Sec. 20-22

Location from nearest town: 2-1/2 miles north of Cavour, SD

Dates of present survey: June 25-26, 2008

Date last surveyed: June 19-20, 2006

Primary Game and Forage Species	Secondary and Other Species
Black Crappie	Northern Pike
Walleye	Black Bullhead
	Common Carp
	White Sucker
	Yellow Bullhead
	Yellow Perch

PHYSICAL DATA

Surface Area: 230 acres

Maximum depth: 8 feet

Volume: Unknown

Contour map available: No

OHWM elevation: None set

Outlet elevation: None set

Lake elevation observed during the survey: Full

Beneficial use classifications: (6) warmwater marginal fish life propagation, (7) immersion recreation, (8) limited-contact recreation and (9) fish and wildlife propagation and stock watering.

Watershed area: 12.7 square miles

Mean depth: 4 feet

Shoreline length: Unknown

Date mapped: NA

Date set: NA

Date set: NA

Introduction

Italian railroad laborers working in the area named Cavour Lake for Count Cavour, an Italian statesman and father of Italian railroads. Water inputs come from a relatively small local watershed and the outlet empties into Pearl Creek and ultimately the James River.

Ownership of Lake and Adjacent Lakeshore Property

Cavour Lake is listed as meandered public water in the State of South Dakota Listing of Meandered Lakes. The South Dakota Department of Game, Fish and Parks (GFP) manages the fishery. GFP also owns and manages a Lake Access Area on the southeast corner of the lake and Game Production Areas on the north and south sides.

Fishing Access

The Cavour Lake Access Area contains a single lane, concrete plank boat ramp and a few areas suitable for shore fishing.

Field Observations of Water Quality and Aquatic Vegetation

The water in Cavour Lake was stained brown and turbid with about 1 m (39 in) of visibility. No submergent or emergent aquatic vegetation was observed. Newly flooded small trees that grew during years of low water were observed near shore around the lake.

BIOLOGICAL DATA

Methods:

Cavour Lake was sampled on June 25-26, 2008 with three overnight gill-net sets and five overnight trap-net sets. The trap nets are constructed with 19-mm-bar-mesh ($\frac{3}{4}$ in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. The gill nets are 45.7 m long x 1.8 m deep (150 ft long x 6 ft deep) with one 7.6 m (25 ft) panel each of 13, 19, 25, 32, 38 and 51-mm-bar-mesh ($\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 in) monofilament netting. Gill-net and trap-net sites are displayed in Figure 4.

Results and Discussion:

Gill Net Catch

Walleye (52.4%) and common carp (32.2%) were the most abundant species sampled in the gill nets (Table 1). Other species sampled included black crappie, saugeye, and black bullhead.

Table 1. Total catch from three overnight gill net sets at Cavour Lake, Beadle County, June 25-26, 2008, 2008.

Species	Number	Percent	CPUE ¹	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Walleye	166	52.4	55.3	<u>+8.8</u>	0.8	0	0	87
Common Carp	102	32.2	34.0	<u>+7.1</u>	32.1	10	5	82
Black Crappie	20	6.3	6.7	<u>+3.5</u>	0.8	25	25	96
Saugeye	19	6.0	6.3	<u>+1.1</u>	2.7	100	74	91
Black Bullhead	10	3.2	3.3	<u>+2.4</u>	69.3	50	0	89

* 6 years (1995, 1997, 2000, 2002, 2004, 2006)

¹ See Appendix A for definitions of CPUE, PSD, RSD-P, and mean Wr.

Trap Net Catch

Black bullhead (63.7%), black crappie (27.8%) and walleye (4.4%) comprised the majority of the trap net sample (Table 2). Other species sampled included common carp, saugeye, yellow perch, and yellow bullhead.

Table 2. Total catch from five overnight trap net sets at Cavour Lake, Beadle County, June 25-26, 2008, 2008.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	600	63.7	120.0	+27.9	334.4	51	0	92
Black Crappie	262	27.8	52.4	+29.7	23.8	30	26	118
Walleye	41	4.4	8.2	+3.4	0.3	9	0	92
Common Carp	32	3.4	6.4	+0.7	9.5	40	20	76
Saugeye	3	0.3	0.6	+0.3	2.2	--	--	--
Yellow Perch	3	0.3	0.6	+0.5	0.0	--	--	--
Yellow Bullhead	1	0.1	0.2	+0.3	0.5	--	--	--

* 8 years (1991, 1993, 1995, 1997, 2000, 2002, 2004, 2006)

Walleye/Saugeye

Walleyes were stocked for the first time in Cavour Lake in 2003 and again in 2007. All of the walleyes sampled appear to be from the 2007 stocking. Saugeye stocking was discontinued after 2001.

Table 3. Walleye gill-net CPUE, PSD, RSD-P, and mean Wr for Cavour Lake, Beadle County, 1999-2008.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
CPUE		0.0		0.0		0.3		4.5		55.3
PSD		--		--		--		--		0
RSD-P		--		--		--		--		0
Mean Wr		--		--		--		--		87

Table 4. Saugeye gill-net CPUE, PSD, RSD-P, and mean Wr for Cavour Lake, Beadle County, 1999-2008.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
CPUE		3.0		11.5		0.3		0.0		6.3
PSD		22		0		--		--		100
RSD-P		11		0		--		--		74
Mean Wr		74		91		--		--		91

Black Crappie

Black crappie trap net CPUE increased to 52.4 this year (Table 5). The majority (77%) of the catch was comprised of a significant year class produced in 2007. Black crappies have not been stocked since 1995 (Table 7).

Table 5. Black crappie trap-net CPUE, PSD, RSD-P, and mean Wr for Cavour Lake, Beadle County, 1999-2008.

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
CPUE		63.8		65.0		14.0		23.4		52.4
PSD		71		100		94		98		30
RSD-P		7		66		77		58		26
Mean Wr		121		105		100		98		118

All Species

The high abundance of common carp continues to be a concern. Black bullhead abundance has shown a steady decline since 2002.

Table 6. Gill-net (GN) and trap-net (TN) CPUE for all fish species sampled in Cavour Lake, Beadle County, 1999-2008.

Species	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
COC (GN)		13.3		47.0		28.7		37.5		34.0
COC (TN)		1.2		25.8		2.0		17.4		6.4
WHS (GN)		--		--		--		--		--
WHS (TN)		0.6		--		0.4		--		--
BLB (GN)		210.7		76.5		55.0		16.0		3.3
BLB (TN)		444.0		502.2		233.8		129.8		120.0
YEB (GN)		--		--		--		--		--
YEB (TN)		--		--		2.6		0.8		0.2
NOP (GN)		0.7		13.0		3.0		--		--
NOP (TN)		0.2		2.8		3.4		1.6		--
BLC (GN)		0.3		2.0		0.7		1.5		6.7
BLC (TN)		63.8		65.0		14.0		23.4		52.4
YEP (GN)		1.3		3.0		0.3		--		--
YEP (TN)		--		0.2		--		0.2		0.6
SXW (GN)		3.0		11.5		0.3		--		6.3
SXW (TN)		4.8		0.4		1.4		--		0.6
WAE (GN)		--		--		0.3		4.5		55.3
WAE (TN)		--		--		--		2.6		8.2

COC (Common Carp), WHS (White Sucker), BLB (Black Bullhead), YEB (Yellow Bullhead), NOP (Northern Pike), BLC (Black Crappie), YEP (Yellow Perch), SXW (Saugeye), WAE (Walleye)

MANAGEMENT RECOMMENDATIONS

1. Stock walleyes as needed to maintain a fishable population.
2. Conduct lake surveys every other year to monitor the fishery.
3. Submit a proposal to renovate the fishing access area including a new boat ramp, boat dock and toilet.

Table 7. Stocking record for Cavour Lake, Beadle County, 1988-2008.

Year	Number	Species	Size
1988	3,410	Black Crappie	Adult
1990	6,300	Yellow Perch	Fingerling
	650	Yellow Perch	Adult
	3,024	Black Crappie	Adult
	700	Northern Pike	Adult
	117	Channel Catfish	Adult
1992	7,500	Northern Pike	Fingerling
	15,213	Yellow Perch	Fingerling
1994	160,000	Saugeye	Eggs
	300,000	Saugeye	Fry
	5,888	Saugeye	Lrg. Fingerling
1995	2,300	Black Crappie	Adult
	2,315	Yellow Perch	Adult
1996	562	Saugeye	Adult
	2,238	Yellow Perch	Adult
1997	17,556	Yellow Perch	Fingerling
1998	34,328	Saugeye	Fingerling
	1,469	Saugeye	Juvenile
2000	2,300	Yellow Perch	Adult
2001	26,100	Saugeye	Fingerling
2003	58,800	Walleye	Fingerling
2007	23,180	Walleye	Fingerling

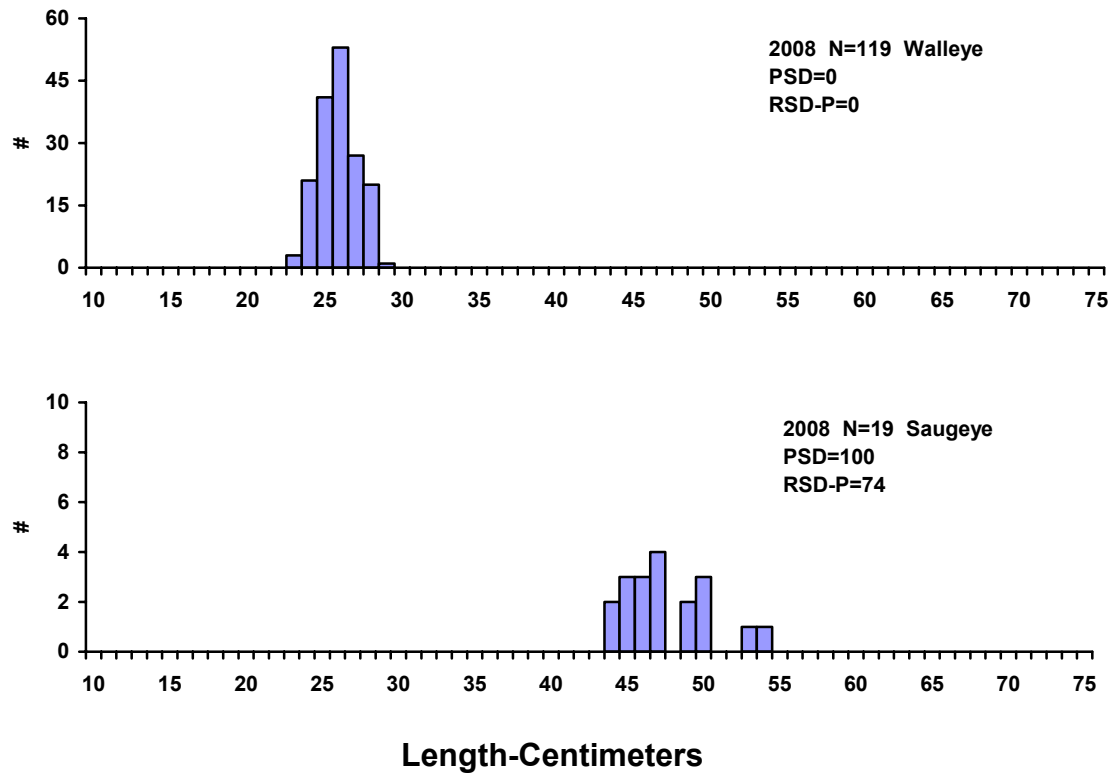
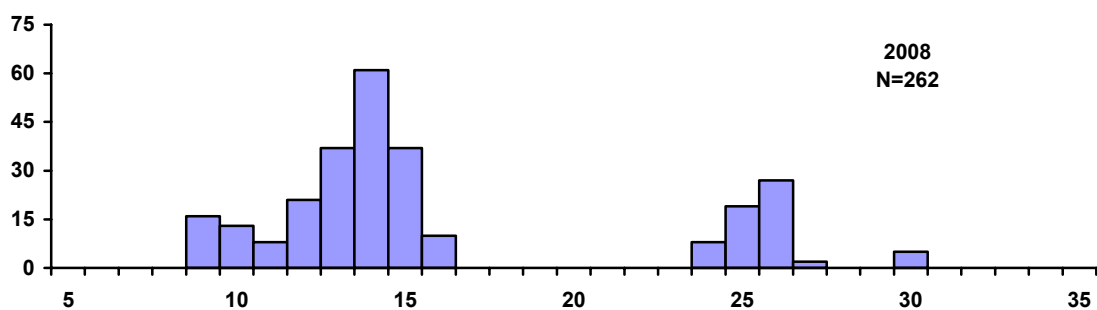
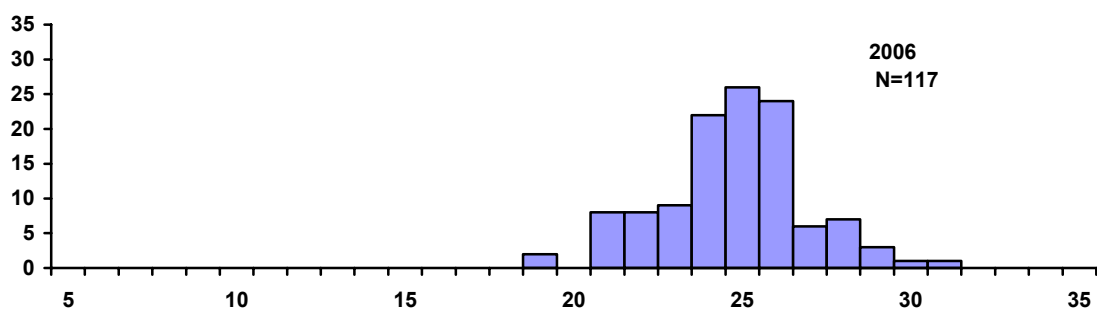
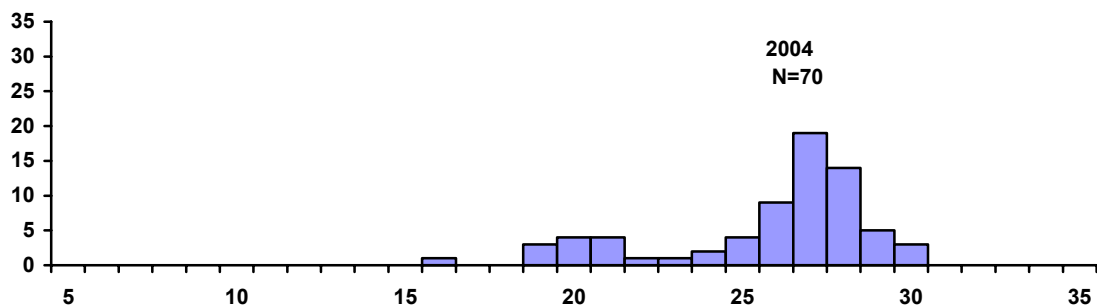
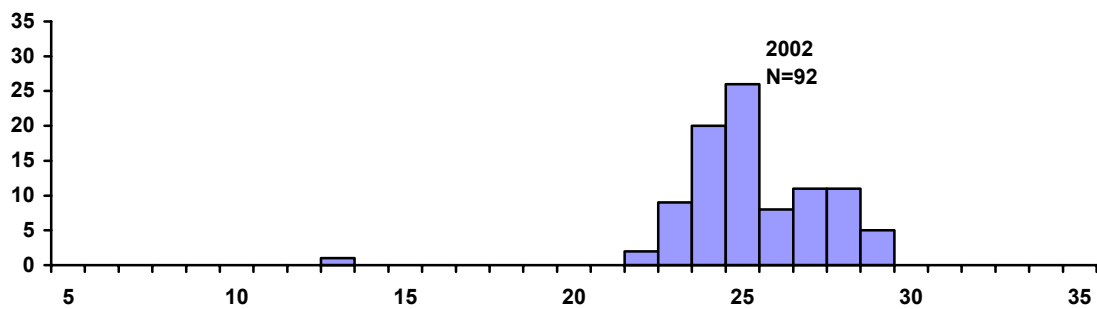


Figure 1. Length frequency histograms for walleye and saugeye sampled with gill nets in Cavour Lake, Beadle County, 2008.



Length-Centimeters

Figure 2. Length frequency histograms for black crappies sampled with trap nets in Cavour Lake, Beadle County, 2002, 2004, 2006, and 2008.

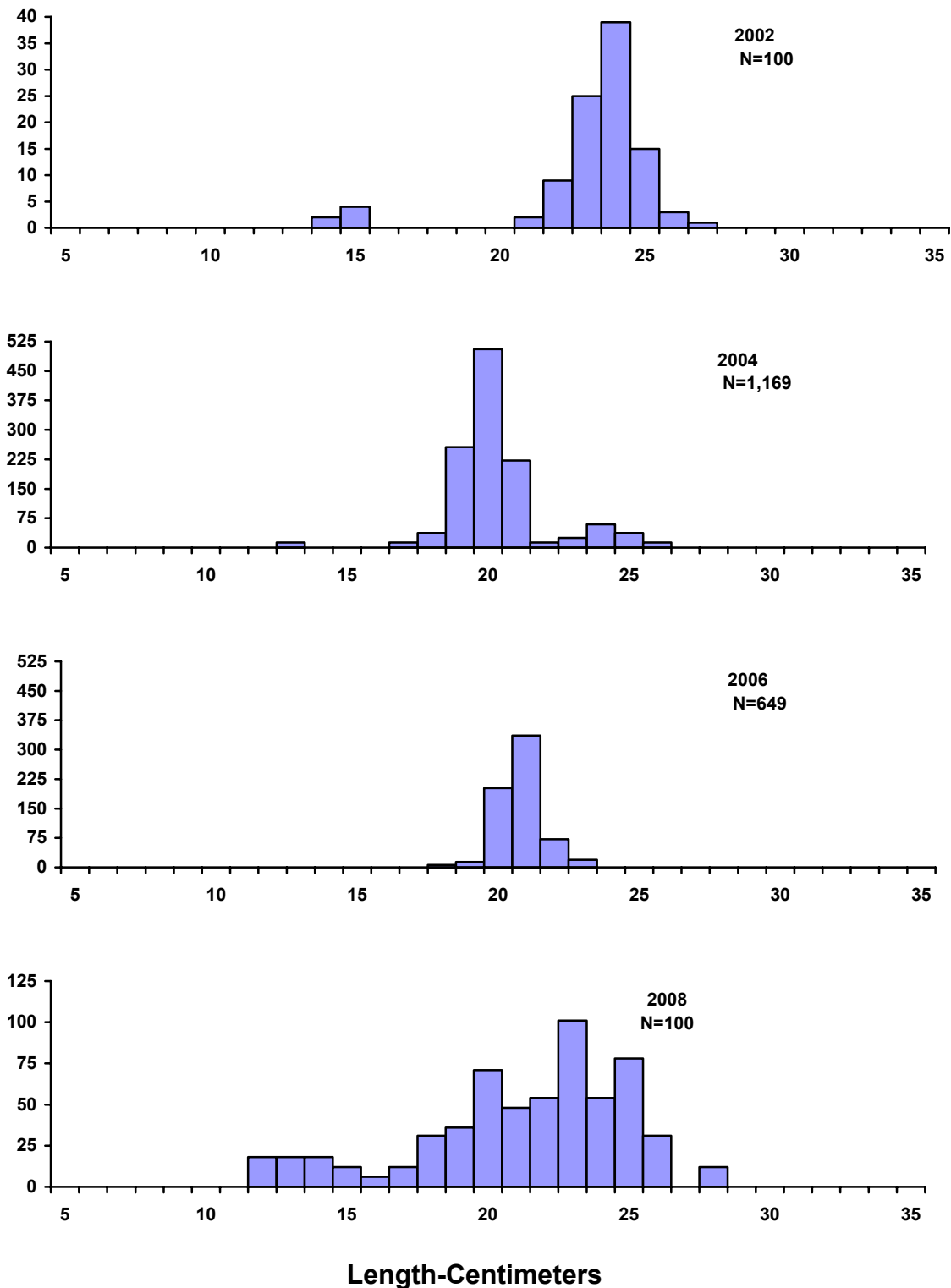
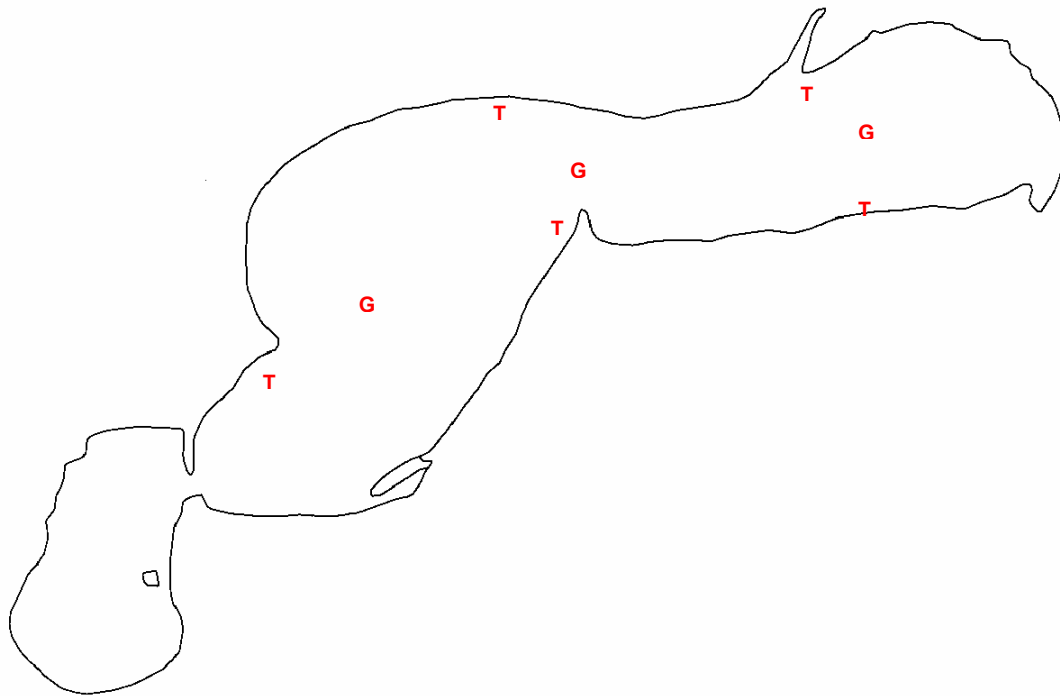


Figure 3. Length frequency histograms for black bullheads sampled with trap nets in Cavour Lake, Beadle County, 2002, 2004 and 2006.



Legend Gill Nets: G
Trap Nets: T

Figure 4. Sampling locations on Cavour Lake, Beadle County, 2008.

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch Per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill-net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$\text{PSD} = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$\text{RSD-P} = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters.

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25	38	51	63	76
Sauger	20	30	38	51	63
Yellow perch	13	20	25	30	38
Black crappie	13	20	25	30	38
White crappie	13	20	25	30	38
Bluegill	8	15	20	25	30
Largemouth bass	20	30	38	51	63
Smallmouth bass	18	28	35	43	51
Northern pike	35	53	71	86	112
Channel catfish	28	41	61	71	91
Black bullhead	15	23	30	38	46
Common carp	28	41	53	66	84
Bigmouth buffalo	28	41	53	66	84
Smallmouth buffalo	28	41	53	66	84

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.